

**Mine Safety and Health Admin., Labor**

**§ 77.1435**

Minimum Value=Weight of Rope×7.0

[48 FR 53241, Nov. 25, 1983; 48 FR 54975, Dec. 8, 1983]

**§ 77.1432 Initial measurement.**

After initial rope stretch but before visible wear occurs, the rope diameter of newly installed wire ropes shall be measured at least once in every third interval of active length and the measurements averaged to establish a baseline for subsequent measurements. A record of the measurements and the date shall be made by the person taking the measurements. This record shall be retained until the rope is retired from service.

[48 FR 53241, Nov. 25, 1983, as amended at 60 FR 33723, June 29, 1995]

**§ 77.1433 Examinations.**

(a) At least once every fourteen calendar days, each wire rope in service shall be visually examined along its entire active length for visible structural damage, corrosion, and improper lubrication or dressing. In addition, visual examination for wear and broken wires shall be made at stress points, including the area near attachments, where the rope rests on sheaves, where the rope leaves the drum, at drum cross-overs, and at change-of-layer regions. When any visible condition that results in a reduction of rope strength is present, the affected portion of the rope shall be examined on a daily basis.

(b) Before any person is hoisted with a newly installed wire rope or any wire rope that has not been examined in the previous fourteen calendar days, the wire rope shall be examined in accordance with paragraph (a) of this section.

(c) At least once every six months, nondestructive tests shall be conducted of the active length of the rope, or rope diameter measurements shall be made—

- (1) Wherever wear is evident;
- (2) Where the hoist rope rests on sheaves at regular stopping points;
- (3) Where the hoist rope leaves the drum at regular stopping points; and
- (4) At drum crossover and change-of-layer regions.

(d) At the completion of each examination required by paragraph (a) of this section, the person making the examination shall certify, by signature

and date, that the examination has been made. If any condition listed in paragraph (a) of this standard is present, the person conducting the examination shall make a record of the condition and the date. Certifications and records of examinations shall be retained for one year.

(e) The person making the measurements or nondestructive tests as required by paragraph (c) of this section shall record the measurements or test results and the date. This record shall be retained until the rope is retired from service.

[48 FR 53241, Nov. 25, 1983; 48 FR 54975, Dec. 8, 1983, 60 FR 33723, June 29, 1995]

**§ 77.1434 Retirement criteria.**

Unless damage or deterioration is removed by cutoff, wire ropes shall be removed from service when any of the following conditions occurs:

(a) The number of broken wires within a rope lay length, excluding filler wires, exceeds either—

(1) Five percent of the total number of wires; or

(2) Fifteen percent of the total number of wires within any strand;

(b) On a regular lay rope, more than one broken wire in the valley between strands in one rope lay length;

(c) A loss of more than one-third of the original diameter of the outer wires;

(d) Rope deterioration from corrosion;

(e) Distortion of the rope structure;

(f) Heat damage from any source;

(g) Diameter reduction due to wear that exceeds six percent of the baseline diameter measurement; or

(h) Loss of more than ten percent of rope strength as determined by non-destructive testing.

**§ 77.1435 Load end attachments.**

(a) Wire rope shall be attached to the load by a method that develops at least 80 percent of the nominal strength of the rope.

(b) Except for terminations where use of other materials is a design feature, zinc (spelter) shall be used for socketing wire ropes. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer.

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(c) Load end attachment methods using splices are prohibited.

**§ 77.1436 Drum end attachment.**

(a) For drum end attachment, wire rope shall be attached—

(1) Securely by clips after making one full turn around the drum spoke;

(2) Securely by clips after making one full turn around the shaft, if the drum is fixed to the shaft; or

(3) By properly assembled anchor bolts, clamps, or wedges, provided that the attachment is a design feature of the hoist drum. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer.

(b) A minimum of three full turns of wire rope shall be on the drum when the rope is extended to its maximum working length.

**§ 77.1437 End attachment retermination.**

Damaged or deteriorated wire rope shall be removed by cutoff and the rope reterminated where there is—

(a) More than one broken wire at an attachment;

(b) Improper installation of an attachment;

(c) Slippage at an attachment; or

(d) Evidence of deterioration from corrosion at an attachment.

**§ 77.1438 End attachment replacement.**

Wire rope attachments shall be replaced when cracked, deformed, or excessively worn.

**Subpart P—Auger Mining**

**§ 77.1500 Auger mining; planning.**

Auger mining shall be planned and conducted by the operator to insure against any hazard to underground workings located at or near such auger operations and all auger holes shall be located so as to prevent:

(a) The disruption of the ventilation system of any active underground mine;

(b) Inundation hazards from surface water entering any active underground mine;

(c) Damage to the roof and ribs of active underground workings; and

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(d) Intersection of auger holes with underground mine workings known to contain dangerous quantities of impounded water.

**§ 77.1501 Auger mining; inspections.**

(a) The face of all highwalls, to a distance of 25 feet on both sides of each drilling site, shall be inspected by a certified person before any augering operation is begun, and at least once during each coal producing shift and all loose material shall be removed from the drilling site before persons are permitted to enter the drilling area. The results of all such inspections shall be recorded daily in a book approved by the Secretary.

(b) In addition, the face of all highwalls, to a distance of 25 feet on both sides of each drilling site, shall be inspected frequently by a certified person during any auger operation conducted either during or after a heavy rainfall or during any period of intermittent freezing and thawing and the results of such inspections shall be recorded as provided in paragraph (a) of this section.

(c) When an auger hole penetrates an abandoned or mined out area of an underground mine, tests for methane and oxygen deficiency shall be made at the collar of the hole by a qualified person using devices approved by the Secretary to determine if dangerous quantities of methane or oxygen-deficient air are present or being emitted. If such is found no further work shall be performed until the atmosphere has been made safe.

(d) Tests for oxygen deficiency shall be conducted with a permissible flame safety lamp or other means approved by the Secretary and all tests for methane shall be conducted with a methane detector approved by the Secretary.

(e) Internal combustion engines shall not be operated in the vicinity of any auger hole in which tests for methane or oxygen deficiency are being made.

**§ 77.1502 Auger holes; restriction against entering.**

No person shall be permitted to enter an auger hole except with the approval of the Coal Mine Health and Safety